

Claims:

1. An electronic weighing apparatus, comprising:
 - a) a displaceable elastic member means for receiving a load and being displaced by the load such that the displacement of said elastic member means is related to the weight of the load;
 - b) a first piezoelectric transducer having a first substrate and a first surface acoustic wave (SAW) transmitter, said first piezoelectric transducer being coupled to said elastic member;
 - c) a second piezoelectric transducer having a second substrate and a first SAW receiver, said second piezoelectric transducer being mounted in close proximity to said first piezoelectric transducer such that said displacement of said elastic member causes a corresponding displacement of one of said first and second piezoelectric transducers relative to each other;
 - d) a first amplifier having an input and an output, said input of said first amplifier being coupled to said first SAW receiver and said output of said first amplifier being coupled to said first SAW transmitter such that said first piezoelectric transducer, said first amplifier, and said second piezoelectric transducer form a first oscillator having a first output frequency;
 - e) processor means coupled to said output of said first amplifier; and
 - f) sealing means covering said first and second piezoelectric transducers for sealing out moisture and other contaminants, wherein
displacement of said elastic member means causes a displacement of one of said first and second piezoelectric transducers relative to each other and thereby changes said first output frequency, and said first output frequency is used by said processor means to determine an indication of the weight of the load.
2. An electronic weighing apparatus according to claim 1, wherein:
said sealing means is an hermetic seal.
3. An electronic weighing apparatus according to claim 1, wherein:
said sealing means is a flexible sleeve.
4. An electronic weighing apparatus, comprising:
 - a) a displaceable elastic member means for receiving a load and being displaced by the load such that the displacement of said elastic member means is related to the weight of the load;
 - b) a first piezoelectric transducer having a first substrate and a first surface acoustic wave (SAW) transmitter, said first piezoelectric transducer being coupled to said elastic member;
 - c) a second piezoelectric transducer having a second substrate and a first SAW receiver, said second piezoelectric transducer being mounted in close proximity to said first piezoelectric transducer such that said displacement of said elastic member causes a corresponding displacement of one of said first and second piezoelectric transducers relative to each other;

- d) a first amplifier having an input and an output, said input of said first amplifier being coupled to said first SAW receiver and said output of said first amplifier being coupled to said first SAW transmitter such that said first piezoelectric transducer, said first amplifier, and said second piezoelectric transducer form a first oscillator having a first output frequency;
- e) processor means coupled to said output of said first amplifier; and
- f) an hermetically sealed temperature sensor having an output coupled to said processor means, wherein

displacement of said elastic member means causes a displacement of one of said first and second piezoelectric transducers relative to each other and thereby changes said first output frequency, and said first output frequency is used by said processor means to determine an indication of the weight of the load and said processor means uses said output of said hermetically sealed temperature sensor to compensate for the effects of temperature on said output of said first amplifier.

5. An electronic weighing apparatus, comprising:

- a) a displaceable elastic member means for receiving a load and being displaced by the load such that the displacement of said elastic member means is related to the weight of the load;
- b) a first piezoelectric transducer having a first substrate and a first surface acoustic wave (SAW) transmitter, said first piezoelectric transducer being coupled to said elastic member;
- c) a second piezoelectric transducer having a second substrate and a first SAW receiver, said second piezoelectric transducer being mounted in close proximity to said first piezoelectric transducer such that said displacement of said elastic member causes a corresponding displacement of one of said first and second piezoelectric transducers relative to each other;
- d) a first amplifier having an input and an output, said input of said first amplifier being coupled to said first SAW receiver and said output of said first amplifier being coupled to said first SAW transmitter such that said first piezoelectric transducer, said first amplifier, and said second piezoelectric transducer form a first oscillator having a first output frequency; and
- e) processor means coupled to said output of said first amplifier, wherein

one of said first and second piezoelectric transducers is provided with two anti-reflection structures to minimize reflection of surface acoustic waves, and

displacement of said elastic member means causes a displacement of one of said first and second piezoelectric transducers relative to each other and thereby changes said first output frequency, and said first output frequency is used by said processor means to determine an indication of the weight of the load.

6. An electronic weighing apparatus according to claim 5, wherein:

one of said two anti-reflection structures is a MYLAR film glued to said substrate.

7. An electronic weighing apparatus according to claim 5, wherein:
one of said two anti-reflection structures is a surface damper on said substrate with a multistrip coupler located between said surface damper and said SAW transmitter or receiver.